```
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200428
File 347:JAPIO Nov 1976-2003/Dec(Updated 040402)
File 371:French Patents 1961-2002/BOPI 200209
E2         1  AU=TROPOEANO J C
E3         0 *AU=TROPOLOC G
E4         2  AU=TROPOTOV A V

File 348:EUROPEAN PATENTS 1978-2004/May W01
File 349:PCT FULLTEXT 1979-2002/UB=20040429,UT=20040422
E2         2  AU=TROPINI RICCARDO
E3         0 *AU=TROPOLOC GEORGE
E4         7  AU=TROPP

File   1:ERIC 1966-2004/Apr 29
File 121:Brit.Education Index 1976-2004/Q1
File 437:Education Abstracts 1983-2004/Apr
E2         1  AU=TROPMAN, JOHN E
E3         0 *AU=TROPOLOC, G
E4         1  AU=TROPP A
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File   1:ERIC 1966-2004/Apr 29
File 121:Brit.Education Index 1976-2004/Q1
File 437:Education Abstracts 1983-2004/Apr
File  35:Dissertation Abs Online 1861-2004/Apr
File   7:Social SciSearch(R) 1972-2004/May W1
File  11:PsycINFO(R) 1887-2004/May W1
File 142:Social Sciences Abstracts 1983-2004/Apr
File   2:INSPEC 1969-2004/May W1
File   6:NTIS 1964-2004/May W2
File   8:Ei Compendex(R) 1970-2004/May W1
File  94:JICST-EPlus 1985-2004/Apr W3
File  95:TEME-Technology & Management 1989-2004/Apr W3
File  65:Inside Conferences 1993-2004/May W1
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Apr
Set     Items   Description
S1     151724   ALPHABET? OR LETTER? ?
S2     699347   COLOR??? OR COLOUR??? OR CHROMAT? OR MONOCHROM?
S3     157187   (LANGUAGE OR ENGLISH)(5N)(TUTORIAL? ? OR TEACH??? OR INSTR-
              UCT???? OR LEARN???)
S4    3253105   COMPUTER????
S5    1181146   ELECTRONIC????
S6     360604   ONLINE OR AUTOMATED
S7       1051   S1(5N)S2
S8         68   S3 AND S7
S9         12   S8 AND S4:S6
S10        12   RD (unique items)
S11         6   S10/2000:2002
S12         2   S10/2003:2004
S13         4   S10 NOT S11:S12
S14         2   VISUAL/TI AND EVOLUTIONARY/TI AND ALGORITHMS/TI
S15        56   S8 NOT S9
S16        54   RD (unique items)
S17        33   S16/2000:2004
S18        21   S16 NOT S17
S19        21   S18 NOT S14
S20        21   Sort S19/ALL/PY,A

13/3,K/1     (Item 1 from file: 1)
DIALOG(R)File   1:ERIC
(c) format only 2004 The Dialog Corporation. All rts. reserv.
01162551 ERIC NO.: ED475464 CLEARINGHOUSE NO.: CS511969
Notes Plus: A Quarterly of Practical Teaching Ideas, 1998-1999.
  Kent, Jeannette, Ed.;
CORP. SOURCE: National Council of Teachers of English, Urbana, IL.
  (BBB05210)
  65pp.
  Notes Plus, v16 n1-4 Aug 1998-Apr 1999
  April 1999 (19990400)
ISSN: 0738-8624
AVAILABLE FROM: National Council of Teachers of English, Notes Plus, 1111
  W. Kenyon Rd., Urbana, IL 61801-1096. Tel: 800-369-6283 (Toll Free); Fax:
  217-328-9645; e-mail: public info@ncte.org; Web site:
  http://www.ncte.org.
EDRS Price MF01/PC03 Plus Postage.
LANGUAGE: English
DOCUMENT TYPE: 22 (Collected works--Serials); 52
```

(Guides--Classroom--Teacher)
RECORD TYPE: ABSTRACT
COUNTRY OF PUBLICATION: U.S.; Illinois
JOURNAL ANNOUNCEMENT: RIEDEC2003
TARGET AUDIENCE: Practitioners; Teachers

This sixteenth volume of "Notes Plus: A Quarterly of Practical Teaching Ideas" contains numerous **teaching** ideas from **English** classrooms. Articles in number 1 are: "'Cricket' Contests as Class Exercises" (Rosemary Laughlin); "Body Biography Revisited" (Julie Medow); "Helping Students Keep in Touch" (Joyce Taaffe); "A Love Affair with **Letter** Writing" (Margaret Oberender); "Using **Color** in Writing Revision" (Dawnelle Hyland); and "A 'Real World' Peer Edit Session" (Katherine Early). It also offers excerpts from NCTE-talk (an **electronic** discussion group) on teaching poetry... ..."Writing 'Great Beginnings'" (Daphne Nelson); "Turn on Your **Computers** and Turn On Your Students" (Jeffrey N. Golub); and "Reflecting on Repercussions" (Doris Brewton). (RS)

13/7/2 (Item 2 from file: 1)
DIALOG(R)File 1:ERIC

00639994 ERIC NO.: ED278236 CLEARINGHOUSE NO.: FL016368
Computer -Aided **Instruction** : **Language** **Teachers** and the Man of the Year.
Marty, Fernand
12pp.
1983 (19830000)
NOTES: In: Savignon, Sandra J., Ed. and Berns, Margie S., Ed. Communicative **Language** **Teaching** : Where Are We Going? Urbana, **Language** **Learning** Laboratory, University of Illinois at Urbana-Champaign, 1983; see FL 016 358.
EDRS Price MF01/PC01 Plus Postage.
LANGUAGE: English
DOCUMENT TYPE: 80 (Journal articles); 142 (Reports--Evaluative)
RECORD TYPE: ABSTRACT
COUNTRY OF PUBLICATION: U.S.; Illinois
JOURNAL ANNOUNCEMENT: RIEJUN1987
TARGET AUDIENCE: Teachers; Practitioners

While disputing the exaggerated claims for **computerized** teaching symbolized by Time Magazine's choice of a **computer** for its 1982 "man of the year," this paper argues that since the technology is omnipresent, and that since it can facilitate learning under certain conditions, teachers should be as informed about it as possible. A discussion of **computer** use for second **language** **instruction** examines the features to look for in a **computer** system, the types of installations available, and considerations in selecting courseware. The **computer** features discussed include memory, speed, processing power, the adaptability of the language used to interact with the machine, screen display capacity and clarity, availability of diacritics and various **alphabets** (e.g., Cyrillic), screen **color** , keyboard design, touch panels, interface with external audio and video devices, and potential radiation exposure. The types of installation discussed include central systems and individual microcomputers and the requirements of each. Courseware considerations include the potential for making copies, programming language, match with the **computer** 's display

capacity, usefulness with a variety of texts, program design quality, and availability of audiovisual components. (MSE)

13/7/3 (Item 1 from file: 11)
DIALOG(R)File 11:PsycINFO(R)

0001690765 1999-15910-001
What time may tell: Towards a new conceptualization of developmental dyslexia.
AUTHOR: Wolf, Maryanne
AUTHOR AFFILIATION: Tufts U, Ctr for Reading & Language Research--Medford--MA--US
JOURNAL: Annals of Dyslexia, Vol 49, 3-28, 1999
PUBLISHER: International Dyslexia Assn--US--http://www.interdys.org

ABSTRACT: Describes a new conceptualization of reading disabilities, the double-deficit hypothesis, that depicts and integrates work on two core deficits in the phonological system and in processes underlying naming speed. Naming speed is potentially both an index of dysfunction in lower-level processes and a contributing factor to a more pervasive rate-of-processing problem that affects varied aspects of reading. General processing speed impairments could potentially affect both orthographic and phonological input. The author provides evidence that slow naming speed constitutes its own core deficit in developmental dyslexia and considers why serial naming has proven such an extraordinary predictor of reading disabilities across many ages, languages, and reader subtype. The author also presents information on a reading intervention program (RAVE-O) for kindergartners with reading disabilities who were reassessed every year until grade 4. Implications for subtyping, diagnosis, and, in particular, intervention are described. (PsycINFO Database Record (c) 2003 APA, all rights reserved)

13/7/4 (Item 2 from file: 11)
DIALOG(R)File 11:PsycINFO(R)

0001676489 1999-11091-002
The double-deficit hypothesis for the developmental dyslexias.
AUTHOR: Wolf, Maryanne; Bowers, Patricia Greig
AUTHOR AFFILIATION: Tufts U, Eliot-Pearson Dept of Child Development--Medford--MA--US
JOURNAL: Journal of Educational Psychology--http://www.apa.org/journals/edu.html, Vol 91(3), 415-438, Sep, 1999
PUBLISHER: American Psychological Assn--US--http://www.apa.org

ABSTRACT: journal abstract- The authors propose an alternative conceptualization of the developmental dyslexias, the double-deficit hypothesis (i.e., phonological deficits and processes underlying naming-speed deficits represent 2 separable sources of reading dysfunction). Data from cross-sectional, longitudinal, and cross-linguistic studies are reviewed supporting the presence of 2 single-deficit subtypes with more limited reading impairments and 1 double-deficit subtype with more pervasive and severe impairments.

Naming-speed and phonological-awareness variables contribute uniquely to different aspects of reading according to this conception, with a model of visual letter naming illustrating both the multicomponential nature of naming speed and why naming speed should not be subsumed under phonological processes. Two hypotheses concerning relationships between naming-speed processes and reading are considered. The implications of processing speed as a second core deficit in dyslexia are described for diagnosis and intervention. (PsycINFO Database Record (c) 2003 APA, all rights reserved)

14/7/2 (Item 1 from file: 65)
DIALOG(R)File 65:Inside Conferences
(c) 2004 BLDSC all rts. reserv. All rts. reserv.

02960465 INSIDE CONFERENCE ITEM ID: CN031383397
Visual Analysis of Evolutionary Algorithms
Wu, A. S.; De Jong, K. A.; Burke, D. S.; Grefenstette, J. J.
CONFERENCE: Evolutionary computation-Congress (1999 congress on evolutionary computation)
PROCEEDINGS OF THE CONGRESS ON EVOLUTIONARY COMPUTATION, 1999; VOL 2 P: 1419-1425
IEEE Service Center, 1999
ISBN: 0780355369; 0780355377
LANGUAGE: English DOCUMENT TYPE: Conference Papers. IEEE cat no 99TH8406
CONFERENCE LOCATION: Washington, DC
CONFERENCE DATE: Jul 1999 (199907) (199907)
NOTE: Cover title: 1999 congress on evolutionary computation

20/6/8 (Item 8 from file: 1)
00446607 ERIC NO.: ED192990 CLEARINGHOUSE NO.: RC012290
Home Task Book for Parents and Kids.
1978 (19780000)

20/6/9 (Item 9 from file: 1)
00378402 ERIC NO.: ED167964 CLEARINGHOUSE NO.: CS004687
Helpbook: Helping Energetic Learning Parents in Readiness.
1978 (19780000)

20/6/11 (Item 11 from file: 1)
00507678 ERIC NO.: EJ285229 CLEARINGHOUSE NO.: CS728467
Philosophy and the Reading Curriculum.
June 1983 (19830600)

20/6/15 (Item 15 from file: 437)
0334592 H.W. WILSON RECORD NUMBER: BEDI95014267
Letters , **numbers, shapes &** colors **: getting a grasp on concept books**
19950500

20/6/16 (Item 16 from file: 1)
00950863 ERIC NO.: ED399523 CLEARINGHOUSE NO.: CS012606
Alphabet Antics: Hundreds of Activities To Challenge and Enrich
1996 (19960000)

20/6/18 (Item 18 from file: 1)

01035701 ERIC NO.: EJ565585 CLEARINGHOUSE NO.: PS527934
Home Kits, Home Visits, and More!
1998 (19980000)

20/3,K/1 (Item 1 from file: 1)
DIALOG(R)File 1:ERIC

00093511 ERIC NO.: ED045286 CLEARINGHOUSE NO.: RE003061
The Effectiveness of Three Reading Approaches and an Oral Language Stimulation Program with Disadvantaged Children in the Primary Grades: A Follow-Up Report After the Third Grade.
Dunn, Lloyd M.; Bruininks, Robert H.
107pp.
1968 (19680000)

...experimental treatment groups and a control group. The experimental reading treatments were the initial teaching **alphabet** , Words-in- **Color** , and a supplemented conventional reading program. The oral stimulation program used the Peabody Language Development...
DESCRIPTORS: Beginning Reading; *Disadvantaged Youth; Initial **Teaching** Alphabet; Inner City; **Language** Research; *Primary Education; *Reading **Instruction** ; Reading Programs; *Reading Research; Research Projects; Southern Schools

20/3,K/2 (Item 2 from file: 1)
DIALOG(R)File 1:ERIC

00091947 ERIC NO.: ED043722 CLEARINGHOUSE NO.: UD010684
The Effectiveness of Three Reading Approaches and an Oral Language Stimulation Program with Disadvantaged Children in the Primary Grades: A Final Report After Two Years of the Cooperative Reading Project.
Dunn, Lloyd M.; And Others;
CORP. SOURCE: George Peabody Coll. for Teachers, Nashville, TN. Inst. on Mental Retardation and Intellectual Development. (XIE28005)
175pp.
1968 (19680000)
SPONSORING AGENCY: National Inst. of Child Health and Human Development (NIH), Bethesda, MD. (BBB00456) Ford Foundation, New York, NY. (QPX27000)

...the last year of the project. The experimental reading treatments were: (1) the Initial Teaching **Alphabet** (ITA), (2) the Words in **Color** (WIC) program, and (3) a Supplemented Conventional Reading Program (SCRP) which used a basic reader...
DESCRIPTORS: Academic Achievement; Achievement Tests; *Disadvantaged Youth; Elementary Education; Elementary School Curriculum; Initial **Teaching** Alphabet; * **Language** **Instruction** ; Oral Reading; Phonics; *Reading; *Reading Instruction

20/3,K/3 (Item 3 from file: 1)
DIALOG(R)File 1:ERIC

00129513 ERIC NO.: ED063808 CLEARINGHOUSE NO.: FL003092
Resource Material for Bilingual Education.;
CORP. SOURCE: National Consortia for Bilingual Education, Fort Worth, TX. (BBB05065); Fort Worth Public Schools, TX. (XPT27340)
217pp.
September 1972 (19720900)
SPONSORING AGENCY: Office of Education (DHEW), Washington, DC. (RMQ66000)

...the bilingual classroom teacher and instructional aide at the primary level by providing material for **language** enrichment and supplementary **learning** activities. There is material to supplement each area of the curriculum; the handbook is divided into sections on patriotism, days--months--seasons, **colors** -- **letters** --numbers, plants--animals, self--family--community, food--clothing, holidays--special events, classroom terms and expressions...
DESCRIPTORS: Biculturalism; *Bilingual Education; Bilingual Teacher Aides; Classroom Techniques; Cultural Education; Cultural Pluralism; English (Second **Language**); *Instructional Materials; * **Language** Enrichment; **Language** **Instruction** ; * **Learning** Activities; Mexican Americans; *Primary Education; Resource Materials; Second **Language** **Learning** ; Spanish Speaking; Vocabulary Development

20/3,K/4 (Item 4 from file: 1)
DIALOG(R)File 1:ERIC
(c) format only 2004 The Dialog Corporation. All rts. reserv.

00126411 ERIC NO.: ED060706 CLEARINGHOUSE NO.: FL002954
Guide to the TANDEM System for the Modern Languages Department Tape Library: A Non-Technical Guide for Teachers.
Hounsell, D.; And Others;
CORP. SOURCE: Portsmouth Polytechnic (England). (BBB07000)
9pp.
January 1972 (19720100)
NOTES: Revised edition

...system procedures. The appendixes contain information on: (1) the classification system and related codes, (2) **color** and **letter** codes, (3) marking of tape box and tape spool, and (4) TANDEM accessions. The study...
DESCRIPTORS: Codification; Indexes; Information Retrieval; Instructional Materials; **Language** **Instruction** ; * **Language** Laboratories; *Library Science; Magnetic Tapes; *Modern Languages; *Tape Recordings

20/3,K/5 (Item 5 from file: 1)
DIALOG(R)File 1:ERIC
(c) format only 2004 The Dialog Corporation. All rts. reserv.

00224980 ERIC NO.: ED100100 CLEARINGHOUSE NO.: EC070878
The Design and Implementation of an Empirically Based Instructional Program for Young Severely Handicapped Students: Toward the Rejection of the Exclusion Principle. Part 3.
Brown, Lou; And Others;
CORP. SOURCE: Madison Public Schools, WI. Dept. of Specialized Educational Services. (BBB07586)

399pp.
August 1973 (19730800)
NOTES: For related yearly program reports see EC 070 876-879
SPONSORING AGENCY: Bureau of Education for the Handicapped (DHEW/OE), Washington, DC. Div. of Training Programs. (BBB09285) Wisconsin State Dept. of Public Instruction, Madison. Bureau for Handicapped Children. (ZQU97877)

...systems. The program stresses using highly structured applied behavioral analysis orientation. Included are four basic **language** skill programs used to **teach** direction following, location concept, receptive **language** , and expressive language. Four reading skill programs reported consist of initial sight word, **color** , basic **alphabet** , and chart story programs. Math skill programs are reported for three areas: number discrimination and...
DESCRIPTORS: Behavioral Objectives; Exceptional Child Education; Exceptional Child Research; * **Language Instruction** ; *Mathematics; Public Schools; *Reading; *Severe Disabilities; Student Evaluation; *Teaching Methods

20/3,K/6 (Item 6 from file: 1)
DIALOG(R)File 1:ERIC
(c) format only 2004 The Dialog Corporation. All rts. reserv.

00185976 ERIC NO.: ED081150 CLEARINGHOUSE NO.: EC052478
Florida Language Profile Manual.
Wolking, William D.; And Others;
CORP. SOURCE: Alachua County Schools, Gainesville, FL. (HWP10934)
109pp.
1973 (19730000)
SPONSORING AGENCY: Florida State Dept. of Education, Tallahassee. Bureau of Education for Exceptional Students. (BBB07466)

...counting, and time, size and quantity, shape, position and direction, same-difference, clock time, negation, **letter** -number, and **color** -name concepts. Also, procedures are given for the following components in Part B: finding letters...
DESCRIPTORS: Cognitive Ability; Concept Formation; *Diagnostic Tests; *Exceptional Child Education; * **Language** Tests; * **Learning** Disabilities ; *Performance Tests; Test Interpretation; Young Children

20/3,K/7 (Item 7 from file: 1)
DIALOG(R)File 1:ERIC
(c) format only 2004 The Dialog Corporation. All rts. reserv.

00227398 ERIC NO.: ED102518 CLEARINGHOUSE NO.: CS001640
Do You Read Me? Different Approaches to Reading Instruction.
McHugh, Walter J.;
CORP. SOURCE: Bay Region Instructional Television for Education, Redwood City, CA. (BBB11389); Station KQED, San Francisco, CA. (CIQ84150)
289pp.
1974 (19740000)
NOTES: An inservice elementary education series of 15 30-minute programs

...to analyze and evaluate each approach fairly. The approaches and topics covered are: words in **color** , the Initial **Teaching Alphabet** , perceptual approaches, linguistic approaches, **language** experience, phonic supplements, individualized reading, programed **instruction** , **language** and reading readiness, enrichment and supplementary materials, and the basal reader. A materials index is...

20/3,K/10 (Item 10 from file: 1)
DIALOG(R)File 1:ERIC

00446204 ERIC NO.: ED192587 CLEARINGHOUSE NO.: FL011785
On Seeing Red with the "Silent Way".
Seely, Jonathan
18pp.
1980 (19800000)

...learner-oriented approach, Gattegno's "Silent Way" has recently been receiving much attention in the **teaching** of **English** as a second **language** . Whereas the cognitive approach to the **teaching** of **language** deserves praise, an integral aspect of Gattegno's method includes the introduction of a 37- **color** **alphabet** , used in a one-to-one phonics approach now out of favor among reading specialists...
DESCRIPTORS: Color; * **English** (Second **Language**); *Mnemonics; Phonics; *Pronunciation **Instruction** ; Second **Language** **Instruction** ; **Teaching** Methods

20/3,K/13 (Item 13 from file: 1)
DIALOG(R)File 1:ERIC

00823661 ERIC NO.: ED352654 CLEARINGHOUSE NO.: CS213611
The Colour of Words.
Farrar, Bernice Lever
6pp.
April 24, 1991 (19910424)

...that words can do in a sentence is an easy, fun way for students to **learn** **English** grammar. First, students should work on identifying nouns, marking them in red. Purple pronouns and...

...name in a vertical row and writes a descriptive line about that person using the **letters** . Students can try **color** -coding advertisements or popular rap songs. Overheads can be used as the instructor edits and...
DESCRIPTORS: Basic Writing; *Class Activities; College **English** ; *Community Colleges; * **English** **Instruction** ; Foreign Countries; *Grammar; *Instructional Effectiveness; Secondary Education; Sentence Structure; Teaching Methods; Two Year Colleges; Writing...

20/7/17 (Item 17 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01664068 ORDER NO: AAD99-04712

PHONOLOGICAL AWARENESS AND READING ABILITY IN BILINGUAL NATIVE SPANISH AND MONOLINGUAL ENGLISH-SPEAKING CHILDREN (SPANISH SPEAKERS)

Author: BAUM BURSZTYN, SHARI ELIZABETH
Degree: PH.D.
Year: 1998
Corporate Source/Institution: HOFSTRA UNIVERSITY (0086)
Sponsor: CHARLES F. LEVINTHAL
Source: VOLUME 59/08-B OF DISSERTATION ABSTRACTS INTERNATIONAL.
PAGE 4496. 153 PAGES

The relationship between phonological awareness and reading ability was examined in bilingual native-Spanish- and monolingual native-English-speaking children. The conceptual framework for this study was drawn from the literature on phonological coding in reading, identification and intervention techniques for children with dyslexia, and the cross-language transfer of reading skills. It was expected that among the bilingual children, their level of phonological awareness in Spanish would be indicative of metalinguistic knowledge and reading skills in English.

Ninety first- and second-grade students (45 bilingual and 45 monolingual) in an urban elementary school district participated in the study. The bilingual group was administered the following tests: Raven's **Coloured** Progressive Matrices, **letter** identification, Spanish word recognition, Spanish phonological awareness, English word recognition, English phonological awareness, as well as pseudoword and word reading. The monolingual English participants received all of the English tasks given to the bilingual group.

Results showed that Spanish phonological awareness predicted Spanish word reading ability within the bilingual group and English phonological awareness predicted English word reading ability within the monolingual group. There were no significant differences between groups in the ability of phonological awareness to predict reading in their respective languages.

In the bilingual group, Spanish phonological awareness skills predicted Spanish word reading significantly better than English phonological awareness skills predicted English word reading. The ability of Spanish phonological awareness to predict English word reading was equivalent to the ability of Spanish phonological awareness to predict Spanish word reading. In addition, Spanish phonological awareness showed greater predictability of English word reading than English phonological awareness.

English phonological awareness was shown to predict English word reading in bilingual students to a lesser degree than English phonological awareness predicted English word reading in monolingual students.

Results suggest the importance of phonological awareness skills for word reading in both monolingual and bilingual children. The findings indicate that Hispanic children may not **learn English** phonological rules adequately for successful reading skill acquisition. Implications include the need to consider an instructional remodeling of the education of Hispanic children which would address the development of English phonological strategies.

20/7/19 (Item 19 from file: 11)
DIALOG(R)File 11:PsycINFO(R)

0001690766 1999-15910-002
History and significance of rapid automatized naming.

AUTHOR: Denckla, Martha Bridge; Cutting, Laurie E.
AUTHOR AFFILIATION: Kennedy Krieger Inst--Baltimore--MD--US
JOURNAL: Annals of Dyslexia, Vol 49, 29-42, 1999
PUBLISHER: International Dyslexia Assn--US--http://www.interdys.org
ABSTRACT: In this review, the origins and history of a test of rapid automatized naming (RAN) are traced from 19th century classical brain-behavior analyses of cases of acquired "alexia without agraphia" through adaptations to studies of normal and reading disabled children. The element of speed (of responding verbally to a visual stimulus) was derived from a test of **color** naming developed over 50 yrs ago as a bedside measure of recovery from brain injuries. Merging the "visual-verbal" connection essential to reading (specific) with the response time element (general), RAN turned out to be a useful correlate and predictor of reading competence, accounting even for variance beyond that accounted for by timed tests of discrete naming. As 1 of the 2 deficits highlighted in the double deficit hypothesis with phonological awareness, RAN has emerged as something more than a particularly difficult challenge to a unitary phonological retrieval deficit, and has itself been subjected to further dissection. Coming full circle to its origins, recent research suggests that RAN taps both visual-verbal (language domain) and processing speed (executive domain) contributions to reading. (PsycINFO Database Record (c) 2003 APA, all rights reserved)

20/7/20 (Item 20 from file: 11)
DIALOG(R)File 11:PsycINFO(R)
(c) 2004 Amer. Psychological Assn. All rts. reserv.

0001672295 1999-10190-003
A longitudinal study of phonological processing skills in children learning **to read in a second** language .
AUTHOR: Comeau, Liane; Cormier, Pierre; Grandmaison, Eric; Lacroix, Diane
AUTHOR AFFILIATION: U Moncton, Dept of Psychology--Moncton--NB--Canada
JOURNAL: Journal of Educational Psychology--
http://www.apa.org/journals/edu.html, Vol 91(1), 29-43, Mar, 1999
PUBLISHER: American Psychological Assn--US--http://www.apa.org

ABSTRACT: journal abstract- English-speaking children (N = 122) in French immersion classes participated in a 1-year longitudinal study of the relation between phonological awareness and reading achievement in both languages. Participants were administered measures of word decoding and of phonological awareness in French and in English as well as measures of cognitive ability, speeded naming, and pseudoword repetition in English only. The relation of phonological awareness in French to reading achievement in each of the languages was equivalent to that in English. These relations remained significant after partialing out the influences of speeded naming and pseudoword repetition. Phonological awareness in both languages was specifically associated with 1-year increments in decoding skill in French. These findings support the transfer of phonological awareness skills across alphabetic languages. (PsycINFO Database Record (c) 2003 APA, all rights reserved)

20/7/21 (Item 21 from file: 1)
DIALOG(R)File 1:ERIC
(c) format only 2004 The Dialog Corporation. All rts. reserv.

00199964 ERIC NO.: ED095138 CLEARINGHOUSE NO.: SP008316
Modular Sequence: English as a Second Language, Methods and Techniques. TTP 001.10 Reading. Teacher Corps Bilingual Project.
Melnick, Susan L.;
CORP. SOURCE: Hartford Univ., West Hartford, CT. Coll. of Education.
(BBB08998)
12pp.
NOTES: For related documents, see SP 008 306-315 and 317-321
EDRS Price MF01/PC01 Plus Postage.
DOCUMENT TYPE: 50 (Guides--General)
RECORD TYPE: ABSTRACT
JOURNAL ANNOUNCEMENT: RIEDEC1974

This module provides a theoretical overview of the process and skills of second-language reading and practical classroom applications. The learning activities are designed to aid the participant in achieving the following objectives: (a) distinguish the characteristics of three categories of the second-language readers; (b) explain the stages of development in reading; (c) design a **teaching** activity to combat native- **language** interference; (d) design a **teaching** activity for a specific group of Puerto Rican Spanish-speakers based on the premise of **language** experience, linguistics, programmed **instruction** , words in **color** , individualized reading, or Initial Teaching **Alphabet** (ITA); and (e) design a teaching activity for advanced-level reading. Four learning alternatives are outlined, and provisions for pre- and post-assessment of student mastery of terminal course objectives are included. (PD)

```
File  88:Gale Group Business A.R.T.S. 1976-2004/May 07
File  47:Gale Group Magazine DB(TM) 1959-2004/May 10
File 148:Gale Group Trade & Industry DB 1976-2004/May 10
File  16:Gale Group PROMT(R) 1990-2004/May 10
File 160:Gale Group PROMT(R) 1972-1989
File 621:Gale Group New Prod.Annou.(R) 1985-2004/May 07
File 141:Readers Guide 1983-2004/May
File 436:Humanities Abs Full Text 1984-2004/May
File 275:Gale Group Computer DB(TM) 1983-2004/May 10
File 647:CMP  Computer Fulltext 1988-2004/Apr W4
File 674:Computer News Fulltext 1989-2004/May W1
Set     Items   Description
S1    1151557   ALPHABET? OR LETTER? ?
S2    1851480   COLOR??? OR COLOUR??? OR CHROMAT? OR MONOCHROM?
S3      76814   (LANGUAGE OR ENGLISH)(5N)(TUTORIAL? ? OR TEACH??? OR INSTR-
             UCT???? OR LEARN???)
S4    6093885   COMPUTER????
S5    3961820   ELECTRONIC????
S6    2792433   ONLINE OR AUTOMATED
S7       5715   S1(5N)S2
S8         27   S3(S)S7
S9          5   S8(S)S4 [2 not relevant; 3 too recent]
S10         0   S8(S)S5
S11         0   S8(S)S6
S12        22   S8 NOT S9
S13        10   RD (unique items)
S14         1   S13/2000:2001
S15         1   S13/2002:2004
S16         8   S13 NOT S14:S15
S17         8   Sort S16/ALL/PD,A

 9/6/1      (Item 1 from file: 88)
05370294      SUPPLIER NUMBER: 61241771
My First CD-ROM Toddler; My First CD-ROM Preschool.(Brief Article)(Product
  Announcement)
May 9, 2000
WORD COUNT:    101     LINE COUNT:  00011

 17/8/2      (Item 2 from file: 88)
DIALOG(R)File  88:(c) 2004 The Gale Group. All rts. reserv.
03203490      SUPPLIER NUMBER: 13253137
Cut and paste. (satire on improving U.S. institutions) (Editorial)
Sept, 1993
WORD COUNT:    1267     LINE COUNT:  00096
 COMPANY NAMES:  Universal Studios--Anecdotes, cartoons, satire, etc.
 DESCRIPTORS:  Amusement parks--Anecdotes, cartoons, satire, etc.; Social
  change--Anecdotes, cartoons, satire, etc.
 SIC CODES:  7996  Amusement parks

 17/8/8      (Item 8 from file: 88)
DIALOG(R)File  88:(c) 2004 The Gale Group. All rts. reserv.
05304780      SUPPLIER NUMBER: 58050561
Do You See What They See?
Dec, 1999
WORD COUNT:    3453     LINE COUNT:  00285
 DESCRIPTORS:  Consciousness--Research; Neurology--Research; Synesthesia--
```

Research; Senses and sensation--Research; Sensory receptors--Analysis
GEOGRPAHIC CODES/NAMES: 1USA United States

17/3,AB,K/3 (Item 3 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.

03229317 SUPPLIER NUMBER: 14982891
Let your fingers do the talking: hands-on language learning through signing. (includes bibliography of helpful sources and children's books and videos)
Good, Linda A.; Feekes, Judy; Shawd, Bernadine
Childhood Education, v70, n2, p81(3)
Winter, 1993
ISSN: 0009-4056 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 2048 LINE COUNT: 00166
ABSTRACT: Sign language is a means of communication that can be taught to children as a second language. Because the signs are universal, sign language facilitates communication in multilingual classes. Sign language also provides visual cues so that children learn it faster than speech. Moreover, children who learn signing simultaneously with spoken language have an alternative means of communicating. Teachers can learn sign language along with the children by teaching one or two signs a day.
... typical populations of children as well. A kindergarten teacher in Sioux Center, Iowa, experimented by **teaching** sign **language** as a second **language** to her kindergarten class. She saw signing as another multisensory approach to language and reading...
...children were fascinated by the idea of communicating with their hands. She introduced them to **letters** , numbers, **color** words, words to simple songs and words for classroom themes. During music time, the children...

File 350:Derwent WPIX 1963-2004/UD,UM &UP=200428
File 347:JAPIO Nov 1976-2003/Dec(Updated 040402)
File 371:French Patents 1961-2002/BOPI 200209

Set	Items	Description
S1	32596	ALPHABET? OR LETTER? ?
S2	740686	COLOR??? OR COLOUR??? OR CHROMAT? OR MONOCHROM?
S3	3278	(LANGUAGE OR ENGLISH)(5N)(TUTORIAL? ? OR TEACH??? OR INSTRUCT???? OR LEARN???)
S4	712220	COMPUTER????
S5	2063765	ELECTRONIC????
S6	67013	ONLINE OR AUTOMATED
S7	2679	S1(S)S2
S8	16	S3 AND S7
S9	**5**	**S8 AND S4:S6**
S10	**11**	**S8 NOT S9**

9/26,TI/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

015386914
WPI Acc No: 2003-447859/200342
Computer **keyboard structure has colored soft elastic press keys classified into key groups, each key group having different color**

9/26,TI/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

011847141
WPI Acc No: 1998-264051/199824
Board game for teaching **number and** language **skills to children - using a number of magnetic tiles on a board divided into a grid, with the tiles marked to emphasise a chosen skill to be practised**

9/34/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

016050437 **Image available**
WPI Acc No: 2004-208288/200420
Language pronunciation teaching assistance equipment has software to translate alphabet into reading format
Patent Assignee: RAI T (RAIT-I)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2004046274	A	20040212	JP 98360834	A	19981218	200420 B
			JP 2003376684	A	20031106	

Priority Applications (No Type Date): US 98166929 A 19981006
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2004046274	A		15	G09B-019/06	Div ex application JP 98360834

Abstract (Basic): JP 2004046274 A

NOVELTY - The equipment uses a symbol and a **colored alphabet** to diagrammatize a designated pronunciation including vowel, consonant, phonetic sign character. A **computer** software translates the **alphabet** into **alphabet** reading format automatically, so that pronunciation of **letter** in word is taught to learner.

USE - For assisting spelling, pronunciation of language alphabet prepared in educational curriculum, for use as educational game. Also for narration of movie and words of song.

ADVANTAGE - By using simple and effective equipment, correct pronunciation of alphabet is taught promptly, without need for special guidance by supervisor or instructor.

DESCRIPTION OF DRAWING(S) - The figure shows **learning** items displayed by the **language** pronunciation **teaching** assistance equipment. (Drawing includes non- **English** language text).

pp; 15 DwgNo 1/14

Derwent Class: P76; P85; T01; W04
International Patent Class (Main): G09B-019/06
International Patent Class (Additional): G09B-005/06; G10L-013/00; G10L-013/06; G10L-013/08

9/34/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

003848825
WPI Acc No: 1983-845075/198351
Display system for creative language teaching **- has CRT and uses** computer **to emphasis hidden language features with colour**
Patent Assignee: SKELLINGS E (SKEL-I)
Inventor: SKELLINGS E
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
CA 1157261	A	19831122				198351 B

Priority Applications (No Type Date): US 7975133 A 19790912
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
CA 1157261	A		41		

Abstract (Basic): CA 1157261 A

The system comprises a cathode ray tube which is controlled to display linguistic material. The display includes in a single frame text language in which at least two portions of the text language are emphasised by similar or identical **colours** that are different from the **colour** of the text language or the background. The **colour** emphasis may be accomplished by **colouring** the indicia such as a **letter** or emphasis mark, aura, or outline around a latter or emphasis mark, block, or blocks around indicia, or background portions of the display portions.

This display may be utilized for better and faster teaching of features of languages by metaphorically identifying patterns.

0/2

Derwent Class: P85; T04; W04
International Patent Class (Additional): G09B-019/04

9/34/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

001508024
WPI Acc No: 1976-H0952X/197632
Electronic visual aid for deaf - analyzes speech waveforms and provides display on light emitting diodes
Patent Assignee: WOOD F J (WOOD-I)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
GB 1444711	A	19760804				197632 B

Priority Applications (No Type Date): GB 7219037 A 19720425

Abstract (Basic): GB 1444711 A
Speech waveforms are analysed into a series of frequency bands pref. corresponding to the eleven pure vowels, the five common diphthong vowels and the twenty eight consonants used in the Pitman initial **teaching alphabet** for **English** . An array represents the signal amplitudes in each such band in terms of light intensity emitted from the diodes so that the resulting various visual patterns can be interpreted in terms of the corresponding spoken sounds by users suffering from profound hearing loss who cannot be helped by conventional hearing aids. Pref. the light emitted from the diodes can be of differnet **colours** to produce a series of distinct recognisable patterns.
Derwent Class: P85
International Patent Class (Additional): G09B-021/00

10/26,TI/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013565360
WPI Acc No: 2001-049567/200106
Keyboard for children, dyslexics, has green frame and yellow keys on which black letters with bigger font size and associated picture is provided

10/26,TI/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013182506
WPI Acc No: 2000-354379/200031
Alphabet **pronunciation guiding method involves** coloring alphabets **of word depending on the way they are to be pronounced**

10/26,TI/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012088510
WPI Acc No: 1998-505421/199843
Language **game for** teaching **of foreign languages - has board with two sides and two sets of blocks, first set having two subsets, one with words on and other with pictures, second set having letters with associated score**

10/26,TI/7 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010282430
WPI Acc No: 1995-183688/199524
Language teaching **aid for children - comprises** letters **and other symbols made from** coloured **three-dimensional elements which join together by means of projections and recesses**

10/26,TI/8 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX

003056150
WPI Acc No: 1981-F6185D/198124
Teaching aid for languages - has sets of displaceable tiles carrying phonetics and letters interposed on board

10/26,TI/9 (Item 9 from file: 350)
DIALOG(R)File 350:Derwent WPIX

001949573
WPI Acc No: 1978-H8843A/197840
Phonetics teaching **system for** English **vowel sounds - uses** colour **coding on tiles with** letters **to give guide to pronunciation**

10/34/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015886759
WPI Acc No: 2004-044594/200405
Series teaching **aid for** language **and literature permutation and combination method**
Patent Assignee: LU X (LUXX-I)
Inventor: LU X
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
CN 1450506	A	20031022	CN 2002106076	A	20020409	200405	B

Priority Applications (No Type Date): CN 2002106076 A 20020409
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes

CN 1450506 A G09B-019/08
Abstract (Basic): CN 1450506 A
NOVELTY - The invention is series teaching aid for Chinese combined arranging method, it includes **alphabetic** practicing card, English **letter** picture pronouncing card, Chinese combined arranging method blocks, there is **alphabetic** method on the the practicing card, and also has phonetic notation, **alphabetic** blocks, makes user to know each prooucing combination; the picture pronouncing card displays the pronouncing method of single English **letter** there is correspondent **letter** combined blocks, different pronouncing card blocks can be combined oppositely displays the pronunciation of the **letter** quickly, sothe user can pronounce with memorizing the ltter; the combined arranging block which has **color** and the sign, it can differentiate the position of **letter** and combine with correspondent **letter** , ther is big **letter** as note or meaning note, and has the note of the **letter**.
DwgNo 0/0
Derwent Class: P85
International Patent Class (Main): G09B-019/08

10/34/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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015329962
WPI Acc No: 2003-390897/200337
Method for teaching languages
Patent Assignee: BORTNIKOV S A (BORT-I); CHERNYSHEV K I (CHER-I); MARTYSHCHENKO V N (MART-I)
Inventor: BORTNIKOV S A; CHERNYSHEV K I
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
RU 2202833	C1	20030420	RU 2001124008	A	20010903	200337	B

Priority Applications (No Type Date): RU 2001124008 A 20010903
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
RU 2202833	C1			G09B-019/06	

Abstract (Basic): RU 2202833 C1
NOVELTY - Method used for teaching persons languages having strictly definite order of words and sentences such as English irrespective of their native language includes demonstration of illustrative members on **colored** members of background. **Colors** of background members strictly correspond to grammatical substance of illustrative members. Sequence of grammemes in **language** being **learned** is coordinated with that of **colors** in spectral decomposition of natural white to red and violet and number of **colors** of each background member is defined proceeding from variance of respective grammeme used. Illustrative members on **colored** members of background may be reproduced in written form and/or orally directly during material presentation. **Colored** members of background may be provided in addition with **alphabetic** and/or symbolic designation pointing to definite grammeme attribute of illustrative member. Use may be also made of achromatic background members and those **colored** blue or dark-violet whereon variant grammemes are illustrated.
USE - Teaching processes; learning games; teaching native and/or foreign languages.
ADVANTAGE - Enlarged didactic capabilities, enhanced efficiency of

memorizing and learning process. 4 cl pp; 0 DwgNo 0/0
Derwent Class: P85
International Patent Class (Main): G09B-019/06

10/34/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011054903
WPI Acc No: 1997-032827/199703
Demonstration of morphology of language during initial stage of learning - includes forming of symbols of words and phrases in colour and perception of symbols repeatedly and visually-tactiluly for identification and memorising
Patent Assignee: KUZNETSOV O A (KUZN-I)
Inventor: KUZNETSOV O A
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
RU 2058597	C1	19960420	RU 9329602	A	19930601	199703	B

Priority Applications (No Type Date): RU 9329602 A 19930601
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
RU 2058597	C1		3	G09B-017/00	

Abstract (Basic): RU 2058597 C

Words and phrases are formed as a sequence of symbols of the corresp. **letters** of separate 3-dimensional **coloured** elements and connection of these elements is carried out by means of alignment of projections and slots in the sequences corresp. to the graphic display during writing.

Before forming of a word and after its forming, symbols are perceived repeatedly and visually-tactiluly for identification and memorising of them, allowing investigation of perception of morphology of the language.

USE/ADVANTAGE - Teaching of writing and reading in pre-school establishments. Better efficiency of teaching process. Bul. 11/20.4.46 Dwg.0/0

Derwent Class: P85
International Patent Class (Main): G09B-017/00
International Patent Class (Additional): G09B-001/36

10/7/10 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

06526607 **Image available**
METHOD FOR READING ALOUD IMAGE OF ALPHABET
PUB. NO.: 2000-112326 [JP 2000112326 A]
PUBLISHED: April 21, 2000 (20000421)
INVENTOR(s): RAI SHOGEN
APPLICANT(s): RAI SHOGEN
APPL. NO.: 10-360834 [JP 98360834]

FILED: December 18, 1998 (19981218)
PRIORITY: 166929 [US 98166929], US (United States of America), October 06, 1998 (19981006)

ABSTRACT

PROBLEM TO BE SOLVED: To enable a user to rapidly teach and **learn** the correct pronunciation of the **English alphabets** under minimum guidance and supervision by obtaining a teaching method which is to be a help to teach and learn the correct reading, pronouncing and spelling of English.
SOLUTION: **Colors** and symbols are adopted in order to indicate the pronunciation of 18 vowels, the pronunciation of 30 consonants, phonetic sign pronunciation and silent tones. The respective **colored alphabet** characters with or without symbols diagrammatize the assigned pronunciation and help indicating the correct pronunciation from the combinations of the various spells of English. The method for diagrammatization with the **colors** and symbols facilitates the lessen of the reading and spelling of the English words. As a result, errors are made to be inferred from the various possible pronunciations and the long concentrated pronunciation training can be decreased.

10/7/11 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

06296239
GUIDANCE FOR PHONOLOGY AND SPELLING
PUB. NO.: 11-237831 [JP 11237831 A]
PUBLISHED: August 31, 1999 (19990831)
INVENTOR(s): MURAKAMI RITSUKO
APPLICANT(s): MURAKAMI RITSUKO
APPL. NO.: 10-080157 [JP 9880157]
FILED: February 20, 1998 (19980220)

ABSTRACT

PROBLEM TO BE SOLVED: To explain the basics of phonology to become the key of hearing to a youth in the suitable term of hearing exercises for **learning** a foreign 1language , to shorten time required for **learning** phonemes to become ability for reading a dictionary by himself, and to help to find out the principle of spelling and pronunciation or the kind of spelling corresponding to the phonemes of each word.
SOLUTION: First of all, it can be exactly reported to a person, who can not hear the phonemes of the foreign language at all, without showing a character every time which phoneme is talked about, and improvement in the efficiency of instructions is attained. Besides, anybody is enabled to identify the consonant **letters** and vowel **letters** of phonemes and while confirming which phoneme is heard by making a character coincident with a sound at all times. Next, a spelling is discomposed into phonemes and the spelling is separately **colored** or surrounded with a circle so as to visualize the feature of the word.

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File 348:EUROPEAN PATENTS 1978-2004/May W01
File 349:PCT FULLTEXT 1979-2002/UB=20040429,UT=20040422
Set     Items   Description
S1     108136   ALPHABET? OR LETTER? ?
S2     398775   COLOR??? OR COLOUR??? OR CHROMAT? OR MONOCHROM?
S3       3079   (LANGUAGE OR ENGLISH)(5N)(TUTORIAL? ? OR TEACH??? OR INSTR-
            UCT???? OR LEARN???)
S4     301051   COMPUTER????
S5     357640   ELECTRONIC????
S6     100666   ONLINE OR AUTOMATED
S7       1386   S1(5N)S2
S8          4   S7(S)S3
S9        116   S7(S)S4:S6
S10         6   LANGUAGE(S)S9
S11         4   S10 NOT S8

 8/3,AB,K/1     (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00971437
INTERACTIVE APPARATUS USING PRINT MEDIA
DISPOSITIF INTERACTIF FAISANT INTERVENIR DES DONNEES MEDIA IMPRIMEES
Patent Applicant/Assignee:
  LEAPFROG ENTERPRISES INC, 6401 Hollis Street, Suite 150, Emeryville, CA
    94608-1070, US, US (Residence), US (Nationality), (For all designated
    states except: US)
Patent Applicant/Inventor:
  WOOD Michael C, 27 La Noria, Orinda, CA 94563, US, US (Residence), US
    (Nationality), (Designated only for: US)
  JEDRZEJEK Tracey Hope, 3364 La Mesa Drive #12, San Carlos, CA 94070, US,
    US (Residence), US (Nationality), (Designated only for: US)
  FREEMAN Richard Glen, 1307 Crestview Drive, San Carlos, CA 94070, US, US
    (Residence), US (Nationality), (Designated only for: US)
  FLOWERS Mark, 119 Los Patios, Los Gatos, CA 95032, US, US (Residence), US
    (Nationality), (Designated only for: US)
  SHULER Eric Thomas, 123 Palm Drive, Piedmont, CA 94610, US, US
    (Residence), US (Nationality), (Designated only for: US)
  GRUNERT Margaret E, 983-7 Asilomar Terrace, Sunnyvale, CA 94086, US, US
    (Residence), US (Nationality), (Designated only for: US)
  AVERY Jason, 1327 Milvia Street, Apt. 4, Berkeley, CA 94709, US, US
    (Residence), US (Nationality), (Designated only for: US)
Legal Representative:
  JEWIK Patrick (et al) (agent), Townsend and Townsend and Crew LLP, Two
    Embarcadero Center, 8th Floor, San Francisco, CA 94111, US,
Patent and Priority Information (Country, Number, Date):
  Patent:              WO 200301475 A1 20030103 (WO 0301475)
  Application:         WO 2002US19364 20020617  (PCT/WO US0219364)
  Priority Application: US 2001886401 20010620; US 2001886399 20010620
Designated States: AE AG AL AM AT (utility model) AT AU AZ BA BB BG BR BY
  BZ CA CH CN CO CR CU CZ (utility model) CZ DE (utility model) DE DK
  (utility model) DK DM DZ EC EE (utility model) EE ES FI (utility model)
  FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU
  LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK
  (utility model) SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW
  (EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
```

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 13149
English Abstract
A method for producing an output in response to an interaction with a print element on a sheet is disclosed. The method includes placing a sheet (27) comprising a print element on a surface of a base unit (12). A user can then mark on the sheet in the vicinity of the print element with a marking instrument (35) . An audio output (18) that corresponds to the print element is generated.
Fulltext Availability:
Detailed Description
Detailed Description
... the interactive apparatus and the removable templates can be designed to teach a user about **colors** , **letters** , shapes, numbers, Although in some embodiments, the interactive apparatus has been described as an educational are used with the base unit can be designed to **teach** adults a second **language** . In another example, the sheet on the base unit may be a pre-printed form...

8/3,AB,K/2 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00903341
METHOD AND APPARATUS FOR TEACHING ALPHABET LETTERING
PROCEDE ET APPAREIL POUR ENSEIGNER LA FORMATION DES LETTRES DE L'ALPHABET
Patent Applicant/Inventor:
GERARDINO Mildred, 603 Monroe Street, Hoboken, NJ 07030, US, US (Residence), US (Nationality)
Legal Representative:
BLACKMON Robert N (agent), Blackmon IPS & Law Office, 2101 Crystal Plaza Arcade PMB #289, Arlington, VA 22202, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200237450 A1 20020510 (WO 0237450)
Application: WO 2000US28874 20001102 (PCT/WO US0028874)
Priority Application: WO 2000US28874 20001102
Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 3972

English Abstract
A method and apparatus for **lettering** through graphical and **color** association. Each **letter** (10) is composed of strokes or motions which the pen follows to create the **letter**. By assigning each motion to a

particular **color**, a student can visualize the creation of the **letter**. By differentiating the **color** for motions that proceed in diffent directions, the student can distinguisch between **letters** that are similar, but facing different directions such as the "b" and the "d". Additionally, when the letters are presented as finished **letters** with the individual "strokes" of the letter shown in the layered collage of stroke colors and with directional arrows (24) provided, a student can "see" the parts that make up the letter and more easily understand how to reproduce the letter. A book for teaching the method is also presented.

Fulltext Availability:
Detailed Description

Detailed Description

... and "q") are often confused, not only by beginning students, 2o but also by adults **learning** **English** as a second **language** or **learning** to read and write for the first time. (One need only try writing the letters...

...proper orientation of letters such as "s" and "z.") By associating the curve of the **letter** b with the **color** brown as a circular, clockwise stroke and the **letter** d with the **color** orange ("half circle, counterclockwise -- 10 -stroke"), it will be easier to remember when forming the letter which direcdtion the letter will face formed. In this way students can associate the **color** of the **letter** with its proper shape. It is expected that this will be especially valuable in teaching students having learning, visual or other disorders such as dyslexia in learning to form **letters** properly by **color** association rather than geometric orientation. Even using the best teaching methods available today, a disproportionate...

8/3,AB,K/3 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00833697

APPARATUS AND METHOD FOR DISPLAYING SENTENCE IN ORDER TO STUDY FOREIGN LANGUAGES

APPAREIL ET PROCEDE D'AFFICHAGE DE PHRASES POUR L'ETUDE DES LANGUES ETRANGERES

Patent Applicant/Inventor:
BAEK SeungHeon, Saint Media, 6F KwaungSung Bldg., 164-3, Samgsung-Dong, Kangnam-Gu, Seoul 135-090, KR, KR (Residence), KR (Nationality)
Legal Representative:
YOON EuiSeoup (agent), Yoones & CO, 302, Namdo Bldg., 823-24, Yoksam-Dong, Kangnam-Gu, Seoul 135-080, KR,

Patent and Priority Information (Country, Number, Date):
Patent: WO 200167227 A1 20010913 (WO 0167227)
Application: WO 2001KR338 20010306 (PCT/WO KR0100338)
Priority Application: KR 200012170 20000310
Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English
Filing Language: Korean
Fulltext Word Count: 2199

English Abstract
The present invention comprises storage means for storing plural orthography data including time display information, output location information and output size information on the screen, and control means for reading the orthography data stored in storage means responding to key signal of user inputted through key signal input means, changing a **color** of the orthography if the time display information of the orthography data accords with the preset ime, deciding the output location on the screen by analyzing the output location information of the orthography, deciding the output size on the screen by analyzing the output size information of the orthography and outputting the orthography data having the decided **color**, output location and output size to video treating means so that the user can recognize speed and intonation of sentence and accent of words constructed the sentence on watching the displayed sentence on the screen.
Fulltext Availability:
Claims
Claim
1 An apparatus for displaying a sentence to **learn** a foreign **language** in a foreign **language** **learning** system for enabling a **learner** to manipulate a key signal inputting means for himself or herself so as to **learn** a foreign **language** , for outputting character io signals through a video signal processing means to a screen by...
...response to key signals of a key inputting means of a user, for altering a **color** of characters (including **letters** and codes) (if a correspondence is seen upon comparing the time information with a pre...

8/3,AB,K/4 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00802534
ANY-TO-ANY COMPONENT COMPUTING SYSTEM
SYSTEME INFORMATIQUE A COMPOSANTS TOUTE CATEGORIE
Patent Applicant/Assignee:
E-BRAIN SOLUTIONS LLC, 1200 Mountain Creek Road, Suite 440, Chattanooga, TN 34705, US, US (Residence), US (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
WARREN Peter, 1200 Mountain Creek Road, Suite 440, Chattanooga, TN 37405, US, GB (Residence), GB (Nationality), (Designated only for: US)
LOWE Steven, 1625 Starboard Drive, Hixson, TN 37343, US, US (Residence), US (Nationality), (Designated only for: US)
Legal Representative:
MEHRMAN Michael J (agent), Paper Mill Village, Building 23, 600 Village Trace, Suite 300, Marietta, GA 30067, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200135216 A2-A3 20010517 (WO 0135216)
Application: WO 2000US31231 20001113 (PCT/WO US0031231)
Priority Application: US 99164884 19991112
Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ

LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG
SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 275671
English Abstract
A universal data and software structure and method for an Any-to-Any computing machine in which any number of any components can be related to any number of any other components in a manner that is not intrinsically hierarchical and is intrinsically unlimited. The structure and method includes a Concept Hierarchy; each concept or assembly of concepts is uniquely identified and assigned a number in a Numbers Concept Language or uniquely identified in a Non-numbers Concept Language. Each Component or assembly of Components is intrinsically related to all other data items that contain common or related components.
Fulltext Availability:
Claims
Claim
... needed to do this are termed a "Concept Language" The main requirements for a Concept **Language** are essentially (but not wholly) a **lan**guage for use in a computer where:
1) Each symbol in the language symbol should be...four meaning as previously described. Each meaning has its own Concept Hierarchy. 'Banana'as yellow **color** , includes' **color** 'and'yellow'in its Concept Hierarchy. For example: 'Is it yellowT 'Yes, it's a...

11/6/1 (Item 1 from file: 349)
00957010 **Image available**
SYSTEM FOR PREDICTING INPUT OF DATA ELEMENTS

11/6/2 (Item 2 from file: 349)
00929543 **Image available**
SMART ELECTRONIC LABEL EMPLOYING ELECTRONIC INK

11/3,AB,K/3 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00747166
TEXT PROCESSING AND DISPLAY METHODS AND SYSTEMS
TECHNIQUES ET SYSTEMES DE TRAITEMENT DE TEXTE ET D'AFFICHAGE
Patent Applicant/Inventor:
O'CONNOR Mark Kevin, 8 Banjine Street, O'Connor, ACT 2602, AU, AU (Residence), AU (Nationality)
Legal Representative:
GRANT Paul Ainsworth, P.O. Box 60, Fisher, ACT 2611, AU
Patent and Priority Information (Country, Number, Date):
Patent: WO 200060560 A1 20001012 (WO 0060560)
Application: WO 2000AU286 20000405 (PCT/WO AU0000286)
Priority Application: AU 999604 19990405
Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC

LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK
SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 26398

English Abstract
Using a personal computer based system, a standard text is processed graphically so as to display an enriched text that includes visual clues as to the pronunciation and/or meaning of words in the orginal text. In one embodiment the visual clues indicate the phonetic structure of words in the text. In another embodiment pictograms are added to the text to indicate the meanings of the words in the text. A method of "morphing" between the graphical display of standard and enriched texts is also disclosed.
Fulltext Availability: Claims
Claim
... value in a particular word cannot be reliably indicated is marked as "wild"; all "wild" **letters** are marked with a common **color** or other convenient common visual marker. A teaching method (designated as "text-morphing"), for use in a system possessing capacities for text-storage and for **electronic** display of text or for other flexible means of text-display, said method being a...

11/3,AB,K/4 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00215274
SYSTEM AND METHOD FOR AUTOMATICALLY SELECTING AMONG A PLURALITY OF INPUT MODES
SYSTEME ET PROCEDE POUR EFFECTUER UNE SELECTION AUTOMATIQUE PARMI UNE PLURALITE DE MODES D'ENTREE
Patent Applicant/Assignee:
SEMANTIC COMPACTION SYSTEM,
Inventor(s):
BAKER Bruce R,
CONTI Robert V,
HERSHBERGER David,
SPAETH Donald M,
HIGGINBOTHAM D Jeffrey,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9212491 A1 19920723
Application: WO 91US6917 19910927 (PCT/WO US9106917)
Priority Application: US 90535 19901228
Designated States: AT BE CA CH DE DK ES FR GB GR IT JP KR LU NL SE
Publication Language: English
Fulltext Word Count: 17978
English Abstract
A continuous input system allows a system operator to continuously input a plurality of polysemous icon symbols to access stored (13, 14) morphemes, words, phrases, or sentences corresponding to an icon sequence. The system, with automatic mode selection for the input system,

containing a plurality of character and symbol keys (4), allows for automatically selecting (4, 5) of the icon (12, 17, 22) mode, a character or word prediction mode (14, 15, 23), and even a subsequent suffix mode, to allow a user to enter morphemes, words, phrases, or sentences sequentially. Further, by utilizing the character and word prediction (14, 15, 23) modes, including the suffix (27, 32) mode, words, phrases or sentences corresponding to non-accessible icon sequences can be automatically activated without having to manually switch out of the icon mode or select the character and word prediction mode. Such automatic icon, word prediction, character and suffix mode selecting, thereby allows continuous text (16) or speech (18) generation with a minimal number of input key (4) activations necessary for a system operator.

Fulltext Availability: Detailed Description

Detailed Description

... are possible. An icon of whouse". however, is not subject to the same ambiguity.

Some **electronic** systems' have attempted to' use letter coding' to associate letters with words, phrases and concepts; however, this method of encoding is also prey to ambiguous interpretation, For example, a reasonable **letter** coding for the **color** "RED" could be the **letter** "R"; for "BLUE", the coding could be "B", However, what happens with the color "BROWN...

...Salient letter encoding takes the initial letter of two or more fundamental words in the **language** string to be represented and uses them for the code. Using this method, for example...

...problem arises that after many utterances,, the same letters 'ORO" are needed to represent other **language** strings. For instance,, "RO" are the most salient letters for "Turn the radio on", A...

...can represent other common phrases such as "Take it off" or "Turn rightm. As the **language** corpus grows larger,, the task of finding other unique combinations of salient letters becomes more...

Visual Analysis of Evolutionary Algorithms

Annie S. Wu[1], Kenneth A. De Jong[2], Donald S. Burke[3], John J. Grefenstette[4], and Connie Loggia Ramsey[5]

[1]Naval Research Laboratory, Code 5514, Washington, DC 20375, aswu@aic.nrl.navy.mil
[2]Computer Science Department, George Mason University, Fairfax, VA, kdejong@cs.gmu.edu
[3]Center for Immunization Research, Johns Hopkins University, Baltimore, MD, dburke@jhsph.edu
[4]Institute for Biosciences, Bioinformatics and Biotechnology, George Mason University, Manassas, VA, gref@ib3.gmu.edu
[5]Naval Research Laboratory, Code 5514, Washington, DC 20375, ramsey@aic.nrl.navy.mil

Abstract- The non-linear complexity of evolutionary algorithms (EAs) make them a challenge to understand. The difficulty in performing detailed analyses of an EA is in sorting through the large amount of of data that can be generated in a single run. This paper describes a visualization tool that facilitates navigation through the details of an EA run. The visualization tool organizes and displays EA data at various levels of detail and allows for easy transitions between related pieces of data.

1 Introduction

The large numbers of complex, non-linear interactions that compose evolutionary algorithms (EAs) make them difficult to analyze and a challenge to understand. The most common methods of evaluating EAs, which include evolutionary programming, evolutionary strategies, and genetic algorithms (GAs), focus on overall performance and gross population statistics. Such methods include comparing the number of function evaluations required to find an acceptable solution, the quality of the solution found, or the rate of increase of the population fitness. The effectiveness of specific mechanisms such as crossover may be estimated by comparing the overall performance of an EA with and without that mechanism turned on. While such measurements are important and provide useful top-down information about EA runs, focusing only on this information could cause us to miss other important details. For example, several studies have investigated the effects of non-coding regions on GA performance. These regions were expected to improve performance by providing a buffer against the disruptive effects of crossover; however, comparisons revealed little difference in overall GA performance (Forrest & Mitchell, 1992; Wu & Lindsay, 1995). A later study which examined the details of reproduction events found that non-coding regions did indeed reduce the disruptive effects of crossover in building blocks (Wu, Lindsay & Riolo, 1997). In fact, non-coding regions reduced crossover's total activity within building block regions, including crossover's ability to construct new building blocks. This decrease in construction appeared to cancel out any advantage gained from the expected decrease in disruption, resulting in little noticeable improvement in overall performance. Such complex, non-linear interactions exist in all types of EAs and suggest that, to fully understand how EAs work, we must examine not only the end result of EA runs but also the means to the end.

The difficulty in performing such analyses lies in sorting through the large amount of data that can be generated in a single EA run. While all of the data from an EA run can easily be saved into files, accessing and interpreting such a large amount of information is no trivial task. The development of tools for sorting, organizing and displaying such databases could greatly facilitate the access and analysis of such data. Desirable capabilities of such tools include the ability to do the following:

- to examine individuals and their encodings in detail
- to trace the source and survival of building blocks or partial solutions
- to trace family trees
- to examine the effects of genetic operators
- to examine populations for convergence, speciation, etc.
- to trace gross population statistics and trends
- to move freely in time and through populations.

One approach to this problem is off-line visualization. We have developed such a system, called VIS, to facilitate analysis of data from the Virtual Virus (VIV) project (Burke, De Jong, Grefenstette, Ramsey & Wu, 1999). VIS takes advantage of the effectiveness of graphical representations and the flexibility of a "clickable" links to provide a navigation tool for accessing and displaying data. In the rest of this paper, we will summarize previous approaches to visualizing EAs and describe the VIS system and how it addresses some of the desired capabilities listed above. Though the examples shown in this paper are primarily from the VIV project which is based on a GA, the VIS program can easily be extended to support other EA data.

2 Background

Graphical visualization techniques are some of the simplest and at the same time most powerful methods for analyzing and communicating information (Tufte, 1983). Well designed

graphical elements can convey large amounts of information in very concise and compact formats. In addition, the human vision system is extremely sensitive to graphical patterns, making graphical representations an extremely useful analysis tool.

Visualization techniques have been used to study EAs both on-line and off-line. On-line systems allow users to closely follow and evaluate the progress of an EA and, in some cases, may allow users to interactively influence or guide the direction of evolution of the system (Collins, 1998; Jones, 1993). Off-line systems use visualization techniques to display information about an EA run after it is complete and may allow the display of data from multiple times of a run and movement both forwards and backwards in the evolutionary process (Shine & Eick, 1997). The most basic displays that have been used include population data matrices which simply present an entire population in raw text format and two-dimensional plots of individual aspects of the population (such as best or average fitness) with respect to time. More complex techniques have focused on how to display more substantial information about entire populations. Examples include methods for displaying the distribution of the population in the solution space (Collins, 1997; Collins, 1998; Nassersharif, Ence & Au, 1994; Shine & Eick, 1997), allele frequencies (Collins, 1997; Wu & Lindsay, 1996), the formation and variation of species (Spears, 1994), and the ancestry of individuals (Spears, 1994) from generation to generation. The multi-dimensional nature of EA systems makes this a balancing act between the clarity of the display and the amount of information that can be included.

3 Overview of system

VIS is an off-line visualization program developed to facilitate the examination and analysis of GA runs. This system was designed with two main goals in mind.

- Provide users with a tool with which they can examine the details of a GA run. The tool should provide easy access to desired information and easy transitions between related pieces of information.
- Develop novel methods and representations for displaying multi-dimensional data in a coherent and informative manner.

VIS is organized as a collection of windows that display data at varying levels of resolution. Within these windows, VIS combines graphical and textual displays to allow users to view "snapshots" in time from a GA run, to examine specific individuals and populations from a run, and to navigate forwards and backwards through a run. "Clickable" elements in the displays link related pieces of information and allow users to easily move through time and among the populations of a GA run.

Whereas most of the systems described in section 2 focus on ways to display the contents and evolution of entire populations and an EA's progress in the solution space, the goal of the VIS tool is to make the data from individual GA runs available and easily accessible for observation and analysis. As a result, VIS focuses less on developing abstract representations which may average, interpolate, or otherwise lose details, and more on displaying complete information and providing navigation capabilities for moving from one part of a run to another.

Because VIS is an off-line system, it is used only after a GA run is complete. Any GA run that is to be analyzed must generate a set of data files containing all of the information necessary for VIS to completely reconstruct the run. Details about files and formats are given in (Grefenstette, Burke, De Jong, Ramsey & Wu, 1997).

3.1 Representation of individuals

The most important elements of a GA are the individuals from the GA populations. These individuals represent potential solutions to the problem to be solved and are typically encoded as strings of characters or values. The ability to examine the formation and structure of individuals in a GA is one of the main purposes for developing the VIS tool. As a result, how we represent or display individuals is very important. VIS is able to display the individuals of a GA run in both textual and graphical representations. Graphical representations can enhance analysis of textual information for several reasons. Color blocks or strips are both easier to distinguish and require less space than individual characters or letters (allowing display of longer individuals). In addition, similarities and differences in color strip patterns are very easy for human vision system to detect, facilitating the comparison of multiple individuals.

VIS allows users to select from several different methods of representing individuals. While current representations focus on discrete alphabets – binary and multi-character – VIS can easily be extended to support floating-point representations and other problem-specific representations as needed. Table 1 shows examples of the currently available representations. The **Genotype** representation displays each individual as a string of characters. For binary alphabets, the characters will be either zero (`0`) or one (`1`). Alternative representations that use more than two values may be composed of other characters. This representation can be used for all alphabets. The **Zebra** representation works with binary alphabets and displays individuals as a series of black and white stripes. A black stripe represents a `0`; a white stripe represents a `1`. The **Neopolitan** representation also works with binary alphabets. This representation assigns one color to each pair of characters. There are four possible pairs of characters; an example color coding scheme would be: `00` = black, `11` = white, `01` = magenta, `10` = orange. This representation is especially sensitive to shifts, insertions, and deletions of one character. The **Color coded** representation works with multi-character alphabets and assigns a unique color to each letter of the alphabet. Individuals are represented as a series of multicolored

Name	Representation	Alphabet
Genotype	331230100112230233023032130302300012 01	All
Zebra		Binary
Neopolitan		Binary
Four Color		Multi-character
Gene locations		Various

Table 1: Available VIS representations of individuals.

stripes. For example, the following color coding scheme was used for the VIV alphabet: `A` = blue, `C` = red, `G` = yellow, `T` = green. The **Gene location** works with problems in which groups of characters together compose building blocks or partial solutions. Each building block is displayed in a unique color on an individual. This representation is especially useful for tracing the construction, propagation, and disruption of building blocks.

3.2 Examining individuals

One of the most basic capabilities needed for studying GAs is easy and direct access to any individual of a run. Because individuals are the most basic elements of a GA, the ability to examine them in detail, in effect, gives us the ability to reconstruct events from any portion or all of a run. Because solutions are encoded as individuals, examining the fitness and composition of an individual essentially allows us to evaluate a GA's progress at a particular moment of a run. Parent and offspring comparisons can reveal the dynamics about reproduction events and how effectively information is constructed, propagated, and disrupted by various genetic operators. Easy access to the "family members" of an individual gives us the ability to trace the discovery and inheritance of information from generation to generation.

VIS provides some of these capabilities with its **Individual** window. An **Individual** window displays all relevant data associated with a given individual. Two formats are available: the **Data** format displays the vital statistics for an individual and the **Family** format displays a graphical representation of a complete family (an individual, its parents, and its offspring). Figure 1 shows an example of the **Data** format. The following information is included in this display.

- The index of the individual. Each individual is arbitrarily assigned an index number to distinguish it from other individuals in the same generation.
- The generation to which the individual belongs.
- The fitness of the individual.
- The length of the individual in bits.
- The genotype of the individual. Available representations are shown in Table 1. The example in Figure 1 uses the **Color coded** representation.
- The genotype, index, and length of the individual's parents. Users may click on a parent genotype to open a new **Individual** window for that parent.
- The mutations, if any, involved in creating this individual. Mutation locations listed and are marked in color.
- The crossover points, if any, involved in creating this individual. If crossover occurred, the portion that each parent contributed to the individual is indicated in color. If crossover did not occur, the individual was cloned from `Parent1`.
- Any problem specific information such as genes or reading frames.

Figure 2 shows an example of the **Family** format. Clicking on a parent or offspring representation in either the **Data** or **Family** display opens a new **Individual** window for the selected individual.

3.3 Examining populations

In addition to examining individuals in isolation, it is also important to understand how individuals relate to other individuals in the population. Well designed graphical displays of a population can facilitate the detection of patterns or trends in the population that may suggest convergence or speciation. Overall characteristics such as diversity, convergence, and level of speciation can be important indicators of a GA's progress.

A **Population** window, shown in Figure 3, displays the individuals of a population in a scrollable window. allowing users to browse entire population. Three types of formats are available in **Population** windows: **Individual**, **Statistics**, and **Histogram**. The **Individual** format, shown in Figure 3, displays the individuals of a population and their index and fitness values. The **Statistics** format, shown in Figure 4, displays statistics for each individual in a population. For both of the above windows, users may click on a specific individual or its index to open a new **Individual** window for that individual. The **Histogram** format, shown in Figure 5, displays a histogram of the fitnesses of the individuals in the population. This display is particularly useful for examining the diversity of a population.

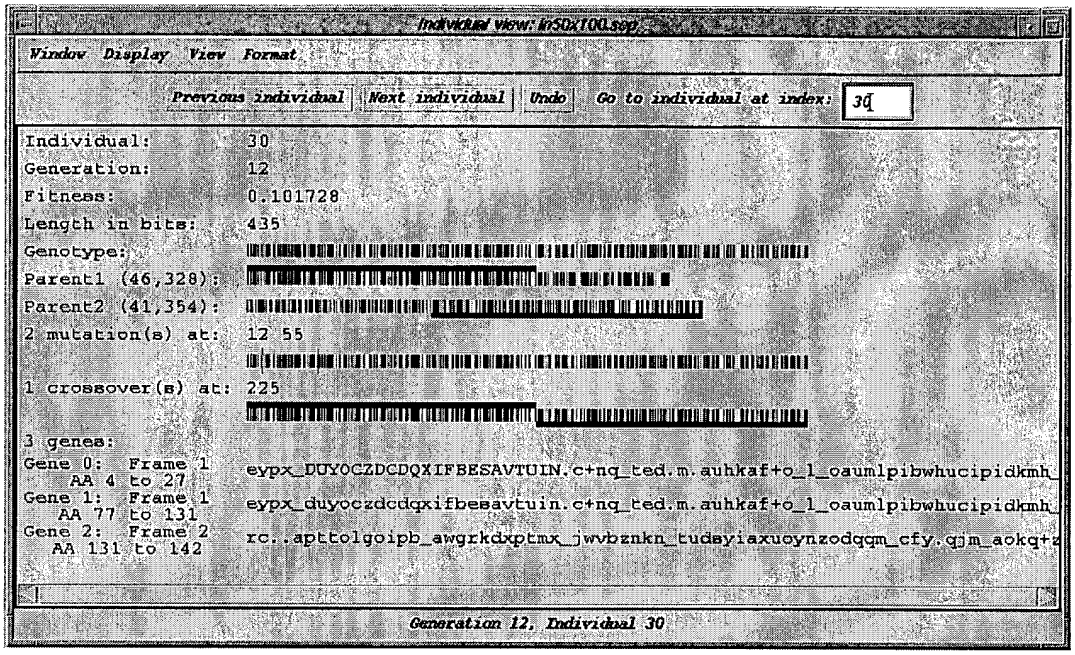

Figure 1: An **Individual** window showing the **Data** format.

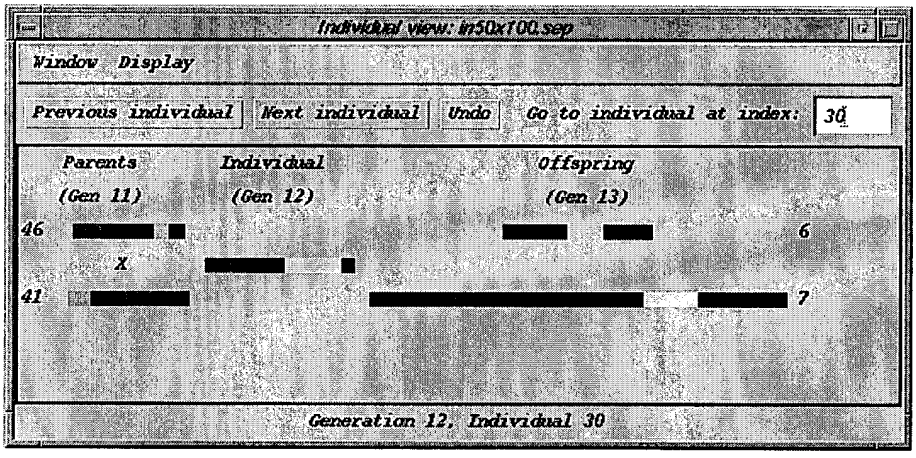

Figure 2: An **Individual** window showing the **Family** format.

3.4 Examining runs

In addition to providing access to very specific details from a run, VIS also displays data relating to an entire run. Tracking gross population and run statistics provide a general idea of GA performance. Such data may contain useful information on trends through time as well as indications of areas (moments) that merit further investigation.

A **Run** window displays data over the entire run. The **Best** and **Median** formats display the best or median individuals, respectively, from each generation of a run. Figure 6 shows an example of a **Best** format. Users may click on an individual to open a new **Individual** window for that individual or click on a generation number to open a new **Population** window for that generation. The **Consensus** format, shown in Figure 7, displays statistics and a "consensus" individual for each generation of a run. The consensus individual shows the most common ordering of genes in a population.

4 Summary and future work

The VIS tool is an off-line visualization program developed to facilitate the examination and analysis of GAs. Instead of focusing solely on methods for displaying a GA's progress in a solution space, VIS concentrates on ways to make all of the details of a run available and easily accessible. This tool allows users to examine snapshots of a GA run and investigate

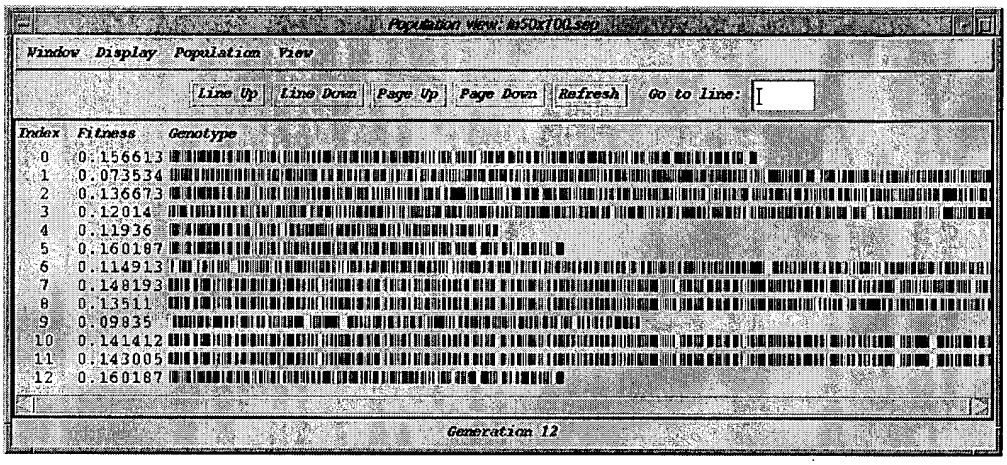

Figure 3: A **Population** window showing the **Individual** format.

questions such as how were the pieces of a solution assembled, when and why did a population converge, and what are the immediate effects of variation of parameters such as population size or selection method. We have found VIS to be an extremely useful tool for examining details of a GA run beyond the average and best fitness for each population. VIS allows us to focus in on specific details of interest, keeping related data easily accessible and all other data available. It has been especially useful in situations where we would otherwise need to print out unmanageable amounts of data just to find or examine a few specific examples.

The VIS tool played an integral role in our analyses of experiments from the VIV project. Using VIS, we were able to find specific examples to verify that, given the opportunity, a GA will retain backup copies of useful information and use this backup information if primary information is disrupted. In addition, we were able to examine the convergence of populations and the effects of genetic operators in detail. Full descriptions of these studies can be found in (Burke, De Jong, Grefenstette, Ramsey & Wu, 1999; Ramsey, De Jong, Grefenstette, Wu & Burke, 1998). We have also found the VIS tool to be extremely useful for developmental and verification purposes. In the development of new GA programs and applications, using a visualization tool to verify new representations and methods can be significantly easier and less time consuming than the alternative of printing out and verifying information on paper or on screen. In essence, VIS can be thought of as a debugger, but at the algorithmic level rather than the code level.

Future work on this project includes the continued development of effective displays of individual and population data and interactive sorting capabilities. We would like to extend graphical representations of individuals to support additional problem representations, including floating point values and possibly two-dimensional structural representations. In addition, we also plan to add automated data collection and statistical analysis options to collect, calculate, and plot data such as the number of offspring generated or the discovery and loss of partial solutions over entire runs or populations.

Acknowledgment

This research was conducted at the Naval Research Laboratory with support from the National Research Council and the Office of Naval Research.

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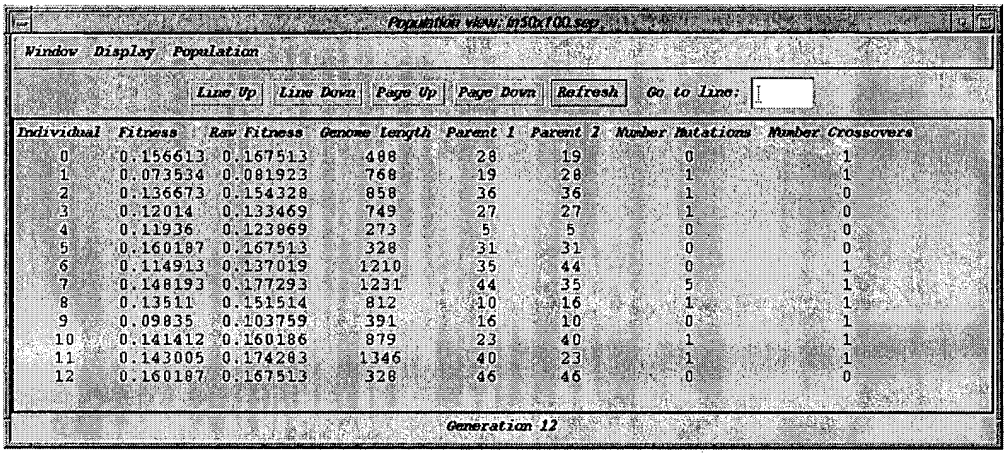

Individual	Fitness	Raw Fitness	Genome Length	Parent 1	Parent 2	Number Mutations	Number Crossovers
0	0.156613	0.167513	488	28	19	0	1
1	0.073534	0.081923	768	19	28	1	1
2	0.136673	0.154328	858	36	36	1	0
3	0.12014	0.133469	749	27	27	1	0
4	0.11936	0.123869	273	5	5	0	0
5	0.160187	0.167513	328	31	31	0	0
6	0.114913	0.137019	1210	35	44	0	1
7	0.148193	0.177293	1231	44	35	5	1
8	0.13511	0.151514	812	10	16	1	1
9	0.09835	0.103759	391	16	10	0	1
10	0.141412	0.160186	879	23	40	1	1
11	0.143005	0.174283	1346	40	23	1	1
12	0.160187	0.167513	328	46	46	0	0

Figure 4: A **Population** window showing the **Statistics** format.

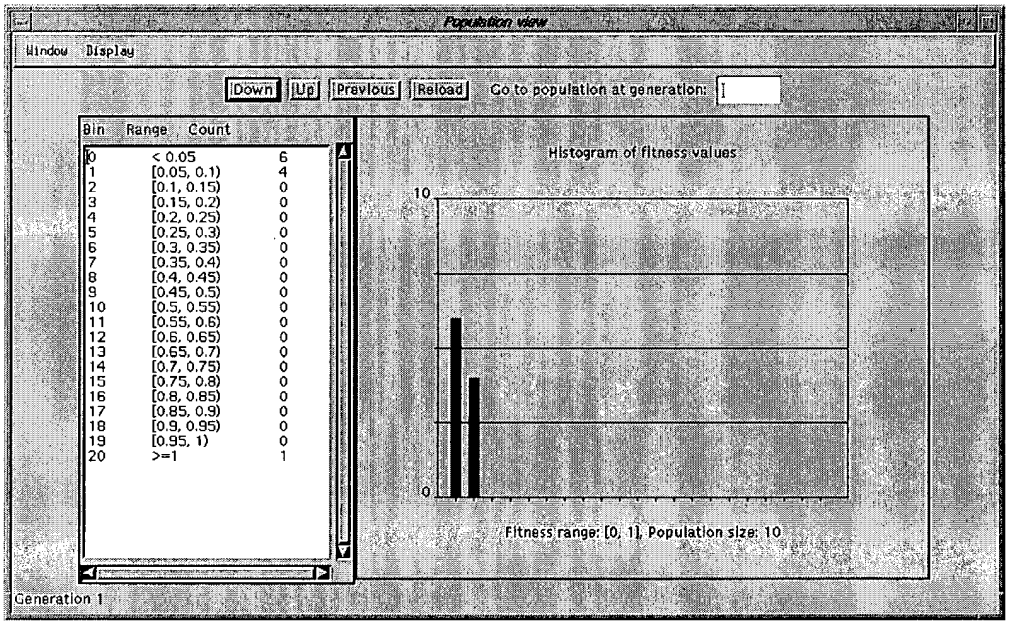

Figure 5: A **Population** window showing a **Histogram** format.

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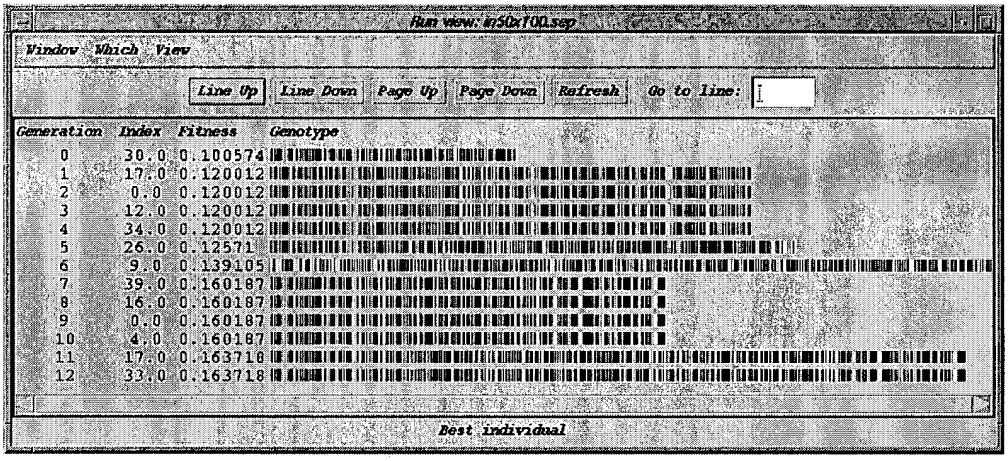

Figure 6: A **Run** window showing the **Best** format.

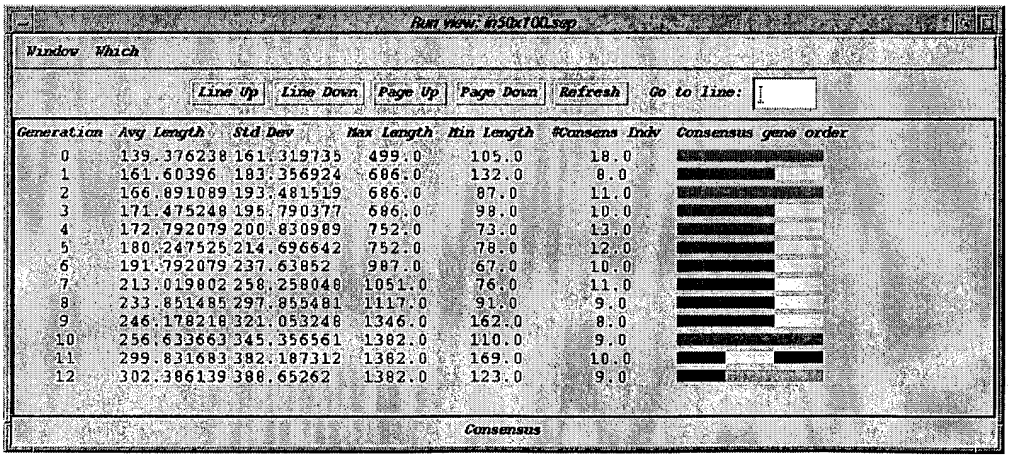

Figure 7: A **Run** window showing the **Consensus** format.